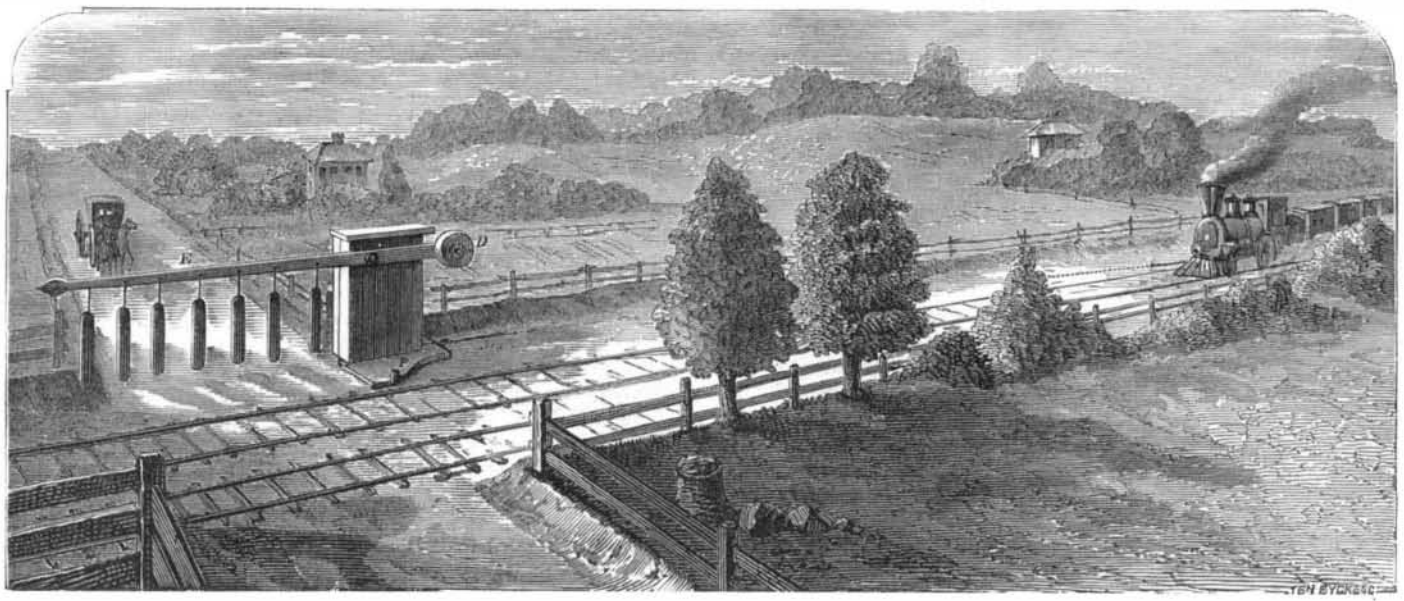
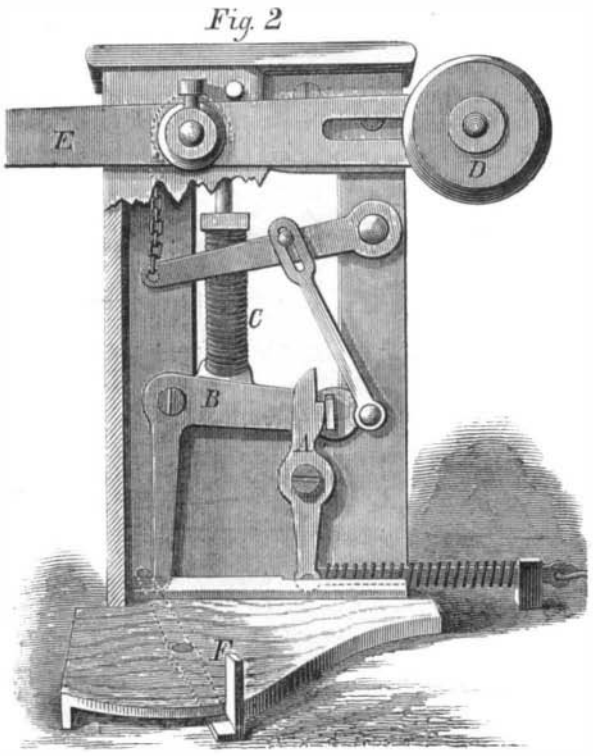
AUTOMATIC RAILROAD GATE AND SIGNAL.

The frequent disasters at level crossings on railroads have called forth many inventions for the purpose of at once closing the roadway to vehicles and warning drivers of their impending danger; and we herewith illustrate a device, simple and apparently universally applicable, which is intended to automatically close the gates at cross roads, and to exhibit, to travelers going in either direction, an indication of the coming train.

In Fig. 1 is seen a perspective view of the apparatus, which consists of a gate, let down to the horizontal position by a coming train, and again elevated to the perpendicular by the same train when it has passed the point of danger. In the latter position, a signal, attached to the top of the bar, is clearly visible from a considerable distance. Fig. 2 shows the working of the device. As the locomotive approaches the crossing, a projection (seen in Fig. 1 close to the engine near the rails is struck by a clutch on the post of the cowcatcher; this pulls a wire or rod (laid parallel to the track and partly underground if preferred) which draws the catch, A, away from the projection on the bell crank, B, as represented in Fig. 2. The horizontal arm of bell crank, B, is thus pushed down by spring, C, and, pulling on the connecting rod and pivoted horizontal lever, shown above, turns, by the chain on the end of the latter, the pulley or signal bar, E (dotted lines), thus overcoming the weight, D, and throwing the bar down across the road. As the train comes immediately opposite the gate, the clutch on the cowcatcher strikes another projection, F, moving the lever (shown in dotted lines, Fig 2), which pushes in the vertical arm of bell crank, B. The projection on the horizontal arm of the latter is thus raised, so that, by the action of its spiral spring, the catch is drawn under and in connection once more with the lug. The pressure of the end of the catch on the latter raises the connecting levers, compressing spring, C, and allows the weight, D, to lift the bar to a vertical position, leaving the apparatus ready for the approach of the next train. The form of gate and of signal can, of course, be adapted to suit varying circumstances.



WALKER'S AUTOMATIC RAILROAD GATE AND SIGNAL.



This device was patented on April 15, 1873, to Mr. Richard Walker, of Hopedale, Mass., who may be addressed for further information.

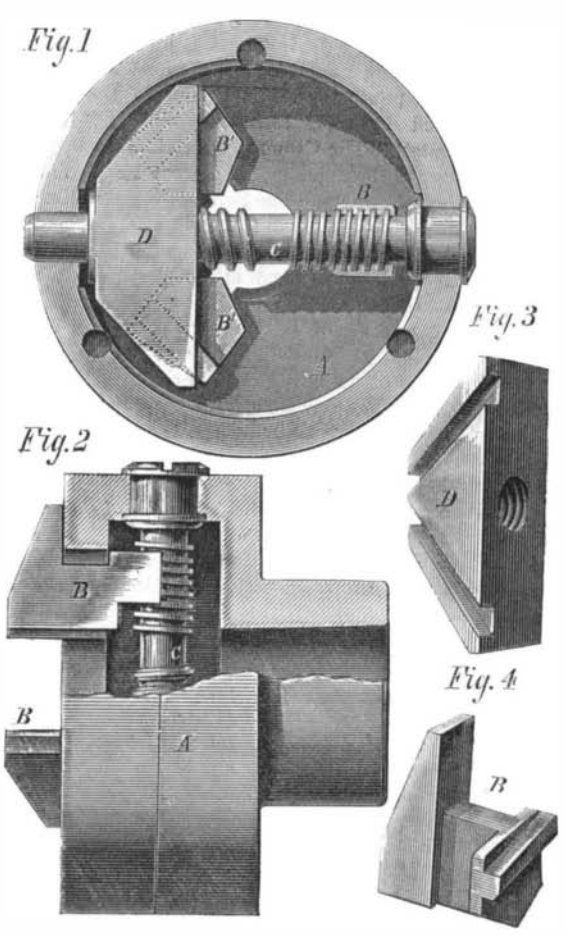
The New Straw Burning Steam Engine.

An interesting trial has been made at Vienna, before several German professors and landed proprietors, of the patent steam engine (illustrated and described on page 403 of our volume XXVIII) which utilizes as fuel straw and other vegetable products. This engine is one of the novelties of the exhibition. A 10 horse power engine was used for the experiment, making 140 revolutions per minute, and the brake was loaded for a duty of 19 horse power. 355 lbs. of straw was carefully weighed, consisting partly of straight rye and partly of loose broken wheat straw, purposely mixed in order to test the capabilities of the engine for burning all kinds of fuel of this description. It required 46 minutes to consume the straw, steam being kept up during the whole time at a pressure of 70 lbs. per square inch with the greatest regularity. This result gives a consumption of about 24·5 lbs. of straw per horse power per hour, and as an engine burning average coal under similar circucumstances would have required about 6·4 lbs. per horse power per hour, it appears that rather less than 4 lbs. of straw are equal to 1 lb of coal. In thrashing, about nine sheaves of straw are required to thrash 100 sheaves of wheat or barley. Everybody present was highly satisfied with the results of the experiment, as it has long been the desire of the eastern farmer to find some means of using steam power without incurring the enormous expense of bringing coal and wood from a long distance. This invention completes another link in the history of the steam engine, and will enable every farmer who grows more straw than he requires for the use of his estate, and who is miles from a coal mine or forest, to use steam instead of animal power, and at far less cost than hitherto.

THE DANBURY DRILL CHUCK.

This invention, of which illustrations in detail are herewith presented, is a three jawed lathe chuck, so constructed that the three jaws are simultaneously moved in radial directions by the revolution of a single right and left hand screw. The action is direct and positive, and, it is claimed, cannot clog, set, or in any way get out of order.

In the sectional views, Figs. 1 and 2, A represents the case, which is made in two parts, suitably secured together, and in the face of which are three slots for the sliding jaws, B B′ B′. Resting in bearings in the case is the shaft, C, upon and near the ends of which are formed screw threads, cut in opposite directions and extending nearly to the linear center of the shaft. It will be observed that these screws are of different pitch.



The shaft, C, is directly in line with and above the slot in which moves the jaw, B; and from the section, Fig. 2, it will be understood that the latter is provided at its inner end with a segment female screw meshing with the male screw of least pitch on the shaft; so that, as said shaft is rotated, the jaw, B, is caused to approach or recede from the cente of the chuck.

D, Fig. 3, is a yoke piece, through which the screw of greatest pitch passes, and thus actuates it in a direction opposite to the motion of the jaw, B. Upon its under surface are two diagonal grooves into which enter corresponding ribs on the jaws, C′, Fig. 4. As the yoke piece, D, is moved, the jaws, C′, are thereby caused to slide in their radial slots. The motion of the three jaws is made isochronous by a proper ratio of pitch between the screws on the shaft.

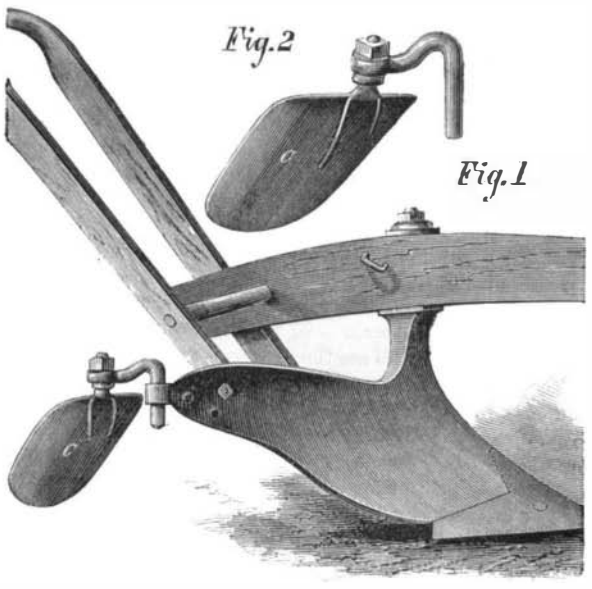
The main points of advantage claimed for this invention are strength, accuracy, durability, and cheapness. It is stated to be the most powerful chuck made, and to hold drills from 0 to ⅝ (full size of drill). By turning down shanks to ⅝, t will retain drills up to one inch inclusive, and this, it is said, without slipping even in the most difficult work.

The chuck has now been in use for six months, giving good and satisfactory results, and is sold with a full warrant as to efficiency, etc.

Patented by Mr. C. H. Reid, August 12, 1873. For further particulars address the manufacturers, F. A. Hull & Co., Danbury, Conn.

IMPROVED PLOW ATTACHMENT.

The invention herewith illustrated is an attachment to the ordinary plow, and is designed to open furrows or channels in the soil of suitable depth to receive potatoes, and afterwards to cover the latter with earth. The device consists simply in a plate, C, pivoted and secured by a screw and nut to an elbowed arm. The vertical position of the support drops into a socket, as shown on the rear of the mold board when in use, or, when not employed, is carried by the staple represented on the plow beam. It will be understood that the furrow left by the plow is too deep for potato planting, and hence the primary object of the attachment is to partially fill the channel with the loose earth thrown up by the share. A bed of friable soil is thus prepared, excellently suitable for the germination of the seed. To cover the latter, it is simply necessary to use the plow without the attachment, the ground being thrown up and over the potatoes by the moldboard in the ordinary way.



The device can be placed in the socket with the end of the vertical part of the arm either up or down, it being suitably secured while in the latter position, so that the downward reach of the plate can be adjusted to plow in grain, etc., to any desired depth. Properly arranged, it is stated, the implement is well adapted for putting in manure or plowing grass ground.

The seed potatoes are of course deposited by a suitable dropper or other convenient means. It is also claimed that a result of using the invention is that the digging of the hills, when the vegetables are ripe, is attended with much less labor than ordinarily. The apparatus is simple, very quickly attached or removed, and readily adapted to the plow. The patentee is a practical farmer, and informs us that he has found it in operation a useful and valuable tool.

Patented through the Scientific American Patent Agency, Aug. 12, 1873, by Mr. William Donnelly, of Calverton, N.Y

NEW YORK AND LONG BRANCH RAILWAY.—The northern section of this road, the New Jersey Central's Long Branch line, is rapidly approaching completion, and, it is expected, will be open to Perth Amboy about October 1. The bridge over the Raritan between Perth Amboy and South Amboy is nearly finished. It is about 3,000 feet long.